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(54) PRODUCTION OF THICK-WALLED STEEL TUBE
HAVING HIGH TOUGHNESS AND LOW YIELD
RATIO

(57) Abstract:

PURPOSE: To obtain a thick-walled steel tube having high toughness, superior strength and weldability, and low yield ratio by rolling a steel of specific composition under specific conditions to form a steel plate of microstructure composed essentially of bainite, heating this steel plate to a temp. in two phase region, and performing tubemaking.

CONSTITUTION: The steel has a composition consisting of, by weight, 0.03-0.20% C, 0.01-0.50% Si, 0.5-2.0% Mn, 0.005-0.10% sol.Al, further one or ≤ 2 kinds among

0.005-0.05% Nb, 0.01-0.10% V, and 0.005-0.10% Ti, and the balance Fe with inevitable impurities. This steel is hot rolled at $\approx 30\%$ cumulative draft, at a temp. between the recrystallization temp. and the Ar₁ point. Then, accelerated cooling is done at (0.5-30)°C/sec cooling rate at least down to a transformation finishing temp., by which a steel plate having a microstructure composed essentially of bainite is formed. This steel plate is reheated up to a temp. in a two phase region between the Ac₁ and the Ac₃ point. Then, bending into cylindrical shape is started from a temp. not lower than the Ar₁ point and working is finished at a temp. lower than the Ar₁ point, followed by cooling at a rate not lower than air cooling rate.

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